

Abstract Submitted  
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**Magnetism and structure of a half-metallic Heusler compound Co-Mn-Cr-Si<sup>1</sup>** YUNG HUH, SWARANGI JOSHI, SANMATI JAIN, OJAS PATHAK, PARASHU KHAREL, Department of Physics, South Dakota State University, Brookings, SD 57007 — Half metallic ferromagnetic Heusler compounds have a potential in the development of spintronic devices for its high spin polarization at the Fermi level and lattice structure compatibility. Heusler compounds based on cobalt are considered a good candidate for room temperature half-metals due to their high Curie temperature. Co<sub>2</sub>CrSi is one of such predicted half-metal, but it is meta-stable and difficult to synthesize in the desired crystal structure. We have successfully synthesized a Heusler compound Co<sub>2</sub>Mn<sub>0.5</sub>Cr<sub>0.5</sub>Si by using arc melting and rapid quenching followed by thermal treatment under high vacuum to control any parasitic contamination. Crystal X-ray diffraction pattern shows the samples crystallize in a cubic Heusler structure with some degrees of structural disorder. Curie temperatures of the prepared samples are observed well beyond room temperature near 900 K. Magnetic anomalies present in as-prepared samples are cleared, and its magnetic properties are improved by thermal treatment.

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